UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE O Level

MARK SCHEME for the November 2005 question paper

5070 CHEMISTRY

5070/04 **Paper 4 maximum raw mark 60**

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

- CIE will not enter into discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the November 2005 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

UNIVERSITY of CAMBRIDGE
International Examinations

1 **(a)** 46 (1) cm^3

(b) less (1) rate decreases as reaction proceeds (1) or similar.

(c) **(i)** 0.005 (1)
(ii) 100 (1)
(iii) 120 (1) cm^3

(d) **(i)** more powdered (1)
(ii) increase concentration (1) **[8]**

2 **(a)** **(i)** hydrogen (1)
(ii) pops in flame (1)
(iii) magnesium (1)
(iv) Ag/Pb (1) reference to Reactivity series (1)

(b) **(i)** III/IV/V (1)
(ii) Zn (1), reason based on relative reactivities (1)
(iii) displacement or redox (1)
(iv) Produces zinc oxide and carbon dioxide (1)
$ZnCO_3 \rightarrow ZnO + CO_2$ (1)

(c) **(i)** carbon monoxide or dioxide(1)
(ii) burns with a blue flame or lime water turns milky (1)
(iii) $Fe_2O_3 + 3C \rightarrow 2Fe + 3CO$ (2) **or**
$2Fe_2O_3 + 3C \rightarrow 4Fe + 3CO_2$ (2) **[15]**

3 to 6 **(c), (b), (b), (c).** [1 mark for each] **[4]**

7 **(a)** 2.05g (1)

(b) yellow to orange, red or pink (1)

(c)

25.8	47.0	32.3
0.0	21.8	6.9
25.8	25.2	25.4

[1 mark for each correct row or column] (3)

Mean value 25.3 (1) cm^3

(d) 0.0024 (1)

(e) 0.0012 (1)

(f) 0.012 (1)

(g) 170.8 (1)

(h) **(i)** 137 (1),
(ii) Barium (1) **[12]**

8 1 coloured (1) solution, effervescence (1)
test: lime water, turns milky (1) carbon dioxide (1)

2 green precipitate (1) insoluble in excess (1)

3 green precipitate (1) insoluble in excess (1)

$FeCO_3$ (1) **[9]**

9 **(a)** 27.8, 30.6, 33.3, 34.0 [all correct] (1)
Temp rises: 2.8, 5.6, 8.3, 9.0, 9.0 [all correct] (1)

(b) points correctly plotted (1)
two straight lines intersecting correctly (2)

(c) **(i)** 0.29 (1)g
(ii) 0.65 (1)g
(iii) reaction complete
or all copper(II) sulphate reacted (1)

(d) zinc dissolves, reacts, disappears
solution becomes less blue to colourless,
copper, or red deposit or solid collects on floor of beaker; [any 2] (2)

(e) 0.56 (1)g which is 0.01 moles or similar explanation based on **(c)(ii)** (1) **[12]**

[For answers **(c)(i)** and **(ii)** please read candidate's graph to nearest half square.]